

INSTRUCTIONS FOR INSTALLATION and OPERATION

Pressure Regulators or Pump Governors

RP-1065-A thru RP-1068-A

Spring adjusted type for steam, air, gas, or water. Valve sizes 1/2" thru 2" Single-Seated, 2 1/2" thru 4" Double-Seated.

TYPICAL INSTALLATIONS

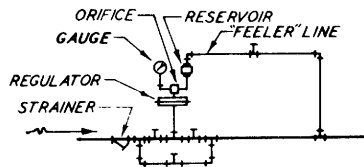


Fig. 1. Typical installation of a Pressure Regulator. Showing feeler pipe connection and pressure gauge. Feeler pipe is connected to reduced pressure side of supply line and at point where control is desired.

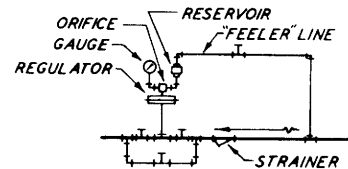


Fig. 3 Showing installation of a Pressure Relief Valve. The feeler pipe is connected to the high pressure or upstream side of the supply line and at point where control is desired.

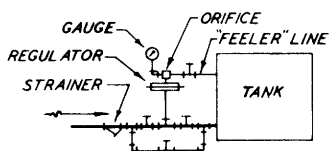


Fig. 2. Showing installation of a Pressure Regulator controlling pressure in a closed vessel. Note regulator is installed as close as possible to the tank.

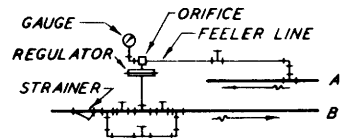


Fig. 4. A typical installation of a Pump Governor. Regulating valve is installed in the steam supply line "B" to pump. Feeler pipe is connected in pump outlet line "A" carrying medium being pumped. Adjustable orifice must be used as shown.

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INSTRUCTION MANUAL NUMBER

P-2085

Rev. A

OPERATION

The controlled pressure from the downstream side of the valve is applied to the diaphragm through the tapped case opening. Through the area of the diaphragm, the force exerted by the adjusting spring is balanced by the force created from the pressure. Even small changes in the reduced pressure produce immediate changes in valve position to regulate the pressure downstream.

INSTALLATION

The regulator may be installed in a horizontal pipeline with the diaphragm either above or below the line. A water seal must be provided when the regulator is used on steam applications to prevent damage to the diaphragm by high steam temperatures.

Reservoir 24669-A is recommended to provide the water seal.

An adjustable orifice, such as No. 94204, installed in the feeler line will generally improve control and protect both the valve and diaphragm by damping out pressure pulsations. Both sides of the orifice should be flooded by the water seal at all times.

The feeler line should extend at least 6 ft. to 10 ft. downstream from the valve on applications where the regulator is controlling line pressures such as in a steam main. For controlling pressures in a tank or pressure vessel, the regulator should be installed as close to the vessel as possible. The feeler line is connected directly into the vessel or tank.

A hand valve should be installed in the feeler line to protect the diaphragm from downstream pressure buildup on liquid or noncondensable gas service during extended shutdown periods. The regulating valve should be protected by a pipeline strainer. A three-valve by-pass is recommended for ease of servicing.

ACCURACY OF REGULATION

In general, the greatest accuracy—closest regulation—is obtained with the largest diaphragm and shortest range which will give the required control pressure. For example, a control pressure of 40 psig can be obtained with any of the three ranges in Model RP-1065-A and with two of the three ranges in Model RP-1066-A. Closest regulation can be expected with the 5-50 lb. range of Model RP-1066-A (size 10 diaphragm). See table of "Accuracy of Regulation."

Unbalanced port areas are not considered in the values tabulated. Small amounts of unbalance are present in single-seated "C" valves, 1/2" and 3/4"; and in semi-

balanced double-seated valves 2½", 3" and 4". Under conditions of high pressure drop, the forces opposing valve closure will influence selection of the regulator model (diaphragm size). See "Accuracy of Regulation" tabulation for actual port area unbalance.

STEAM CAPACITY

Valve Size	½	¾	1	1¼	1½	2	2½	3	4		
Valve C _v	0.87	1.55	3.5	10.6	12.9	17.0	22.5	82.5	130	226	
Max. Supply Press., PSIG	175						125	125	125		
Supply Pressure PSI	Max. Setpoint PSI	Maximum Pounds per Hour (Based on Critical Pressure Drops)									
5	2.5	30	55	122	380	450	600	800	2800	4500	9000
10	5	39	67	155	450	550	750	1000	3600	5500	11000
15	7.5	45	80	180	550	670	900	1200	4300	6900	13000
20	10	55	95	210	650	780	1000	1400	5000	7700	15500
30	15	69	120	275	825	1000	1350	1800	6500	10000	20000
50	25	99	175	400	1200	1450	1900	2600	9000	15000	28000
70	35	130	215	525	1550	1800	2500	3400	12000	19000	38000
90	45	175	240	645	1900	2300	3000	4000	15000	24000	---
125	62.5	205	375	850	2600	3100	4000	5500	---	---	---

NOTE: For capacities where the setpoint is greater than 50% of the supply pressure, use the valve sizing slide rule or consult a factory representative.

ADJUSTMENT

This regulator can be set to control at any pressure within the limits of the pressure range stamped on its nameplate.

After placing the regulator in service, allow several minutes to reach stable operation, then observe pressure. If not correct, change the pressure setting in manner directed below.

To RAISE pressure setting, turn adjustment wheel to RIGHT (see arrow "A," Fig. 5).

To LOWER pressure setting, turn adjustment wheel to LEFT (see arrow "B," Fig. 5).

Make new settings as necessary until desired pressure is obtained.

The regulator has a scale plate to indicate the position of the adjustment. This feature is helpful in resetting the adjustment when frequent changes are necessary. Scale graduations are not in pounds per square inch.

ACCURACY OF REGULATION

Pressure change—PSI—For full valve stroke

Regulator No.	Adjustable Range PSIG	Valve Size									
		½*	¾**	1†	1¼	1½	2	2½	3	4	
RP-1065-A1	5-50	2½	3	4	5	6½	7½	9	7½	9	11
RP-1065-A2	10-100	5	6½	7½	10	12½	15	17½	15	17½	22
RP-1065-A3	25-150	11	13	16	21½	27	32	37	32	37	48
RP-1066-A1	3-25	1½	1½	2	2½	3	4	4½	4	4½	6
RP-1066-A2	5-50	2½	3½	4	5	6½	7½	9	7½	9	11
RP-1066-A3	15-75	5	6½	8	11	13	16	18½	16	18½	24
RP-1067-A1	1-12	1	1½	1½	2½	2½	3	4	3	4	5
RP-1067-A2	5-25	2½	3	4	5	6½	8	9	8	9	12
RP-1068-A1	½-6	½	½	1	1	1½	1½	2	1½	2	2½
RP-1068-A2	2-12	1½	1½	2	2½	3	4	4½	4	4½	6
Port Area Unbalance Sq. Inches	.06	.13	.22	0	0	0	0	.51	.60	.81	
Max. Supply Pressure PSIG		175						125			
Max. Pressure Drop PSI		175						120	100	80	

*½" reduced port
**1/8" reduced port
†Port reduced by one size.

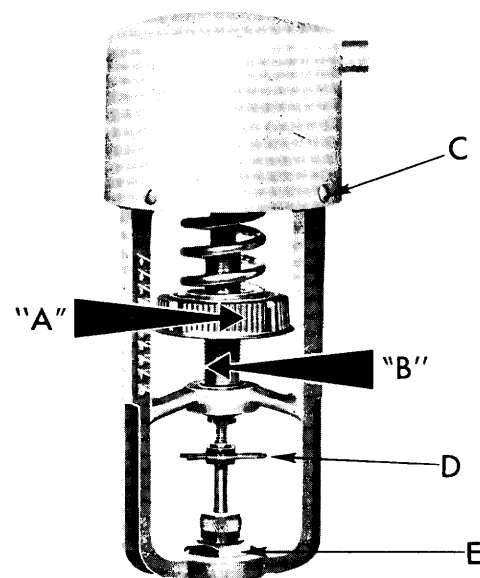


Fig. 5

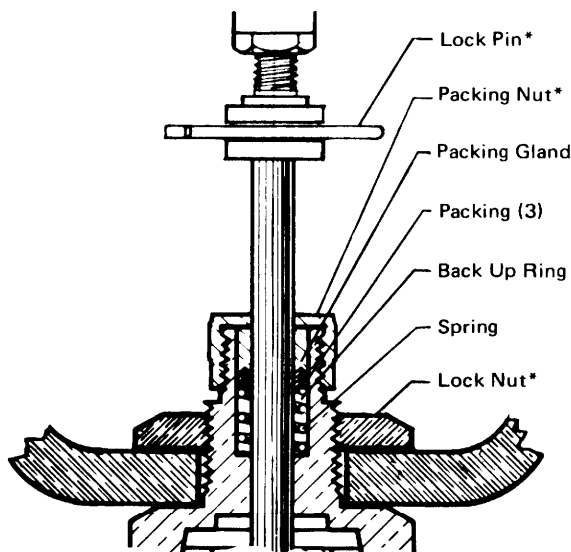
MAINTENANCE

This regulator, if properly installed and used, should require very little attention or maintenance; however, every piece of mechanical equipment deserves some care.

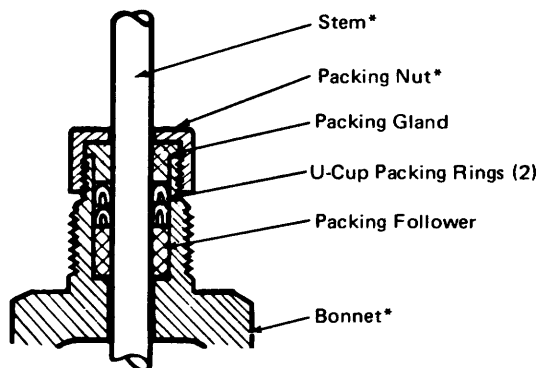
Packing:

Valve stem packing nut should be kept only **finger-tight**. If valve stem packing must be replaced, follow steps below (see Fig. 6).

1. Remove lock pin.
2. Remove locknut and separate control from valve.
3. Remove packing nut and packing gland.
4. Remove bonnet from valve.
5. Remove packing, spring plate and spring.
6. Clean out packing box with a clean rag or soft paper.
7. Wipe off stem with clean rag. DO NOT attempt to polish. If stem is scratched or nicked around packing area, it should be replaced.
8. Replace bonnet on valve.
9. Carefully place new packing in packing box. If chevron packing is not available, in an emergency, repack with a good grade of graphited string packing. Put a small amount of good packing lubricant in the stuffing box while repacking. This packing, however, should be replaced with Teflon* chevron packing as soon as possible.
10. Replace packing gland.



*Not included with kit—must be ordered separately.
Packing Kit 81900-B3
Packing used for steam service



*Not included with kit—must be ordered separately.
Packing Kit 81900-D1
Packing used for water service

Fig. 6

11. Replace packing nut and tighten.
12. Connect valve to control and tighten locknut.
13. Insert lock pin.

**Trademark of DuPont Company.*

Removing or Installing Valve:

1. Remove lock pin "D" (Fig. 5). (Do not disturb locknut connecting regulator stem to connector.)
2. Remove locknut "E" (Fig. 5) and lift regulator frame off valve body.
3. Remove valve from line.
4. To install valve, reverse the above operations.

Pressure Element:

The pressure element consists of bellows and cup and is not repairable. In event of damage the complete unit must be replaced.

To remove pressure element, follow steps listed below.

1. Turn adjusting wheel to left (see arrow B, Fig. 5) until adjusting wheel is all the way down.
2. Remove screws "C" (Fig. 5) and lift off element.
3. To install element, reverse the above operations.

Refacing Valve Seat:

Under certain conditions the valve seat may be lapped with the valve poppet. However, this should be done only by an experienced person. If the valve poppet or insert is badly scored it should be replaced.

If valve is to be lapped, remove regulator from valve (see "Removing Valve"), remove bonnet, and place a small amount of (extremely fine) grinding compound or a graphited paste made by mixing fine flecks of graphite with engine oil. Apply this to the valve insert face. In lapping, every effort should be made to avoid scoring or grooving the contact faces. Wipe poppet and insert thoroughly with a clean rag after each operation.

Use light pressure in lapping even to the extent of holding up part of the weight of the poppet as it is rotated. Frequently lift off poppet to check surface.

Heavy pressures cause the grains to become embedded in the material and will produce deep grooves or scores.

When seating face of poppet is smooth, groove or lapping scores in seating face of insert, if not too deep, does not particularly harm or in some cases seems to assist in getting a quick seat. Wipe away all compound from the valve poppet and inserts.

Valve repair kits are available for some valves.

Trouble Shooting:

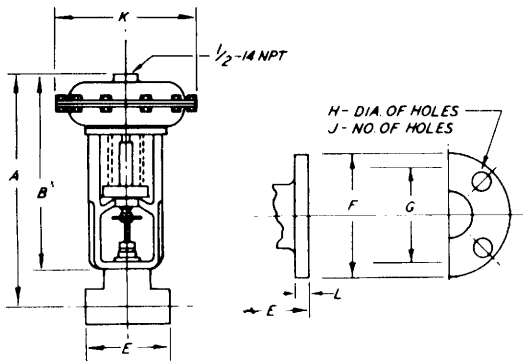
This regulator is supplied to operate within the pressure stated on the nameplate and the valve has been ground to close tight against line pressure specified on your order. If the regulator does not function properly immediately after completing installation and you are unable to correct the trouble, write to the factory and outline your difficulty. In writing to the factory, please give the type regulator, the size, serial number, etc.

If the regulator has been operating satisfactorily for some time and trouble develops, the following information may be of assistance.

Check packing nut (see Fig. 6) to be sure it is only finger tight and the valve stem is free to move up and down without undue friction.

The usual cause for poor control over the reduced pressure is the collection of scale or other foreign matter on the seats. Such matter may hold the poppet off seat and in time, cause the seat or poppet to become scored. To inspect seats and poppet, remove valve bonnet.

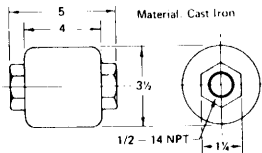
DIMENSIONS, SHIPPING WEIGHTS



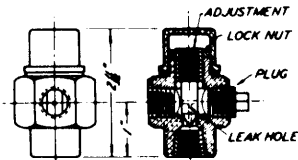
FLANGE DIMENSIONS

Valve Size, Inches	F	G	H	J	L
2-1/2	7	5-1/2	3/4	4	11/16
3	7-1/2	6	3/4	4	3/4
4	9	7-1/2	3/4	8	15/16

RESERVOIR NO. 24669-A



ADJUSTABLE ORIFICE NO. 94204-A SERIES



94204-A1 Without Leak hole
94204-A2 With Leak hole

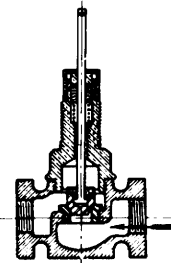


Fig. 7
Type "CI" Valve
Direct-Acting

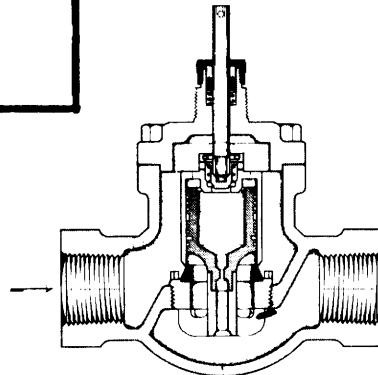


Fig. 8
Type "MC" Valve

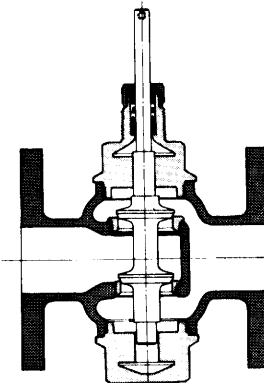


Fig. 9
Type "FA" Valve
Direct-Acting

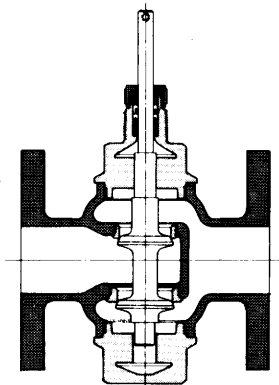


Fig. 10
Type "FA" Valve
Reverse-Acting

Valve Size	1/2*	1/2**	3/4†	1†	1 1/4†	1 1/2†	2†	2 1/2	3	4	
Valve Type	CI - Single-Seated			MC - Single-Seated Piston Balanced				FA - Double-Seated			
Body Material	Cast Iron										
Valve Trim	Stainless Steel										
End Connections	Screwed							Flanged - 125 lb. Cast Iron			
E	4	4	4	5-3/4	5-3/4	6-1/8	7-3/8	7-3/4	8-5/8	10-1/4	
Regulator No.	RP-1065-A										
A	13-3/16			14-3/4		14-15/16		15-5/8		16	17
B	11-1/4										
K	4-3/4										
Shipping Weight	19	19	22	26	30	34	60	86	106	154	
Regulator No.	RP-1066-A										
A	13-3/16			14-3/4		14-15/16		15-5/8		16	17
B	11-1/4										
K	6-5/16										
Shipping Weight	21	21	24	28	32	36	62	88	108	156	
Regulator No.	RP-1067-A										
A	13-5/8			15-3/16		15-3/8		16-1/16		16-3/8	17-7/16
B	11-5/8										
K	8-1/4										
Shipping Weight	22	22	25	33	37	41	63	89	109	157	
Regulator No.	RP-1068-A										
A	14-1/8			15-11/16		15-7/8		16-9/16		16-7/8	17-5/16
B	12-1/8										
K	10-9/16										
Shipping Weight	28	28	31	35	39	43	69	95	115	171	

* 1/4" reduced port
** 3/8" reduced port
† Port reduced by one size

NOTE: On special order, bronze body valve with bronze trim can be furnished in 2 1/2", 3" and 4" sizes. 150 lb. MSS flanges standard. Full ported valves with different materials of construction are available on sizes 2" and smaller.

VALVE TYPES

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Q-2949 (7/75)

Printed in U.S.A.